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JORDAN AND HAMBURG LLP
122 EAST 42ND STREET
SUITE 4000
NEW YORK, NY 10168

EXAMINER

ECHELMAYER, ALIX ELIZABETH

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1745

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/667,770	Applicant(s) HAMADA ET AL.	
	Examiner Alix Elizabeth Echelmeyer	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 23, 2007 has been entered.
2. Claims 1-4, 11 and 13 have been amended. Claim 16 has been cancelled. Claims 1-15 are pending and are rejected for the reasons given below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 13-15 are rejected under 35 U.S.C. 103(a) as being obvious over Ikoma et al. (US Patent 5,663,007).

Ikoma et al. teach the use of a cylindrical or rectangular casing for a sealed storage battery (column 1 lines 23-30). Ikoma et al. further teach projecting ridges on the longer side faces of the case (Figure 1).

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Regarding claims 1 and 13, Ikoma et al. fail to teach the projecting ridges extending all the way to the top of the case where the opening is found. It would have been an obvious matter of design choice to extend the ridges to the opening, for example in order to facilitate production of the battery. Extending the ribs, instead of having to include a further step to ensure that the ribs do not extend all the way to the opening, would make the formation of the case simpler. Also, having the ridges extend to the opening would allow the assembler to match the ridges in the case to the ridges in the lid, ensuring that the lid and the case are lined up properly. MPEP 2144.04

Additionally, a sealing plate would inherently include ridges to match those of the sealing plate, obvious over Ikoma et al. as discussed above, since if it did not have matching ridges it would not meet the edges of the case and therefore not perform its sealing function.

As for claim 14, it can be seen in Figure 1 that the ridges of Ikoma et al. are discontinuous between the end face and the opposite end (2).

Regarding claim 15, Ikoma et al. fail to teach that the ridges have a trapezoidal cross-shape. It would have been obvious to one having ordinary skill in the art at the time of the invention to use a trapezoidal rib, for example if the ribs might fit together better since ribs of one cell could be given complementary angles to another. Such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B)

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5. Claims 5, 10, 11 (as dependent on claim 5) and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. in view of Asahina et al. (US Pre-Grant Publication 2003/0027040).

The teachings of Ikoma et al. as discussed above are incorporated herein.

Ikoma teaches the limitations of claim 1 but fails to teach that the cells have an electrode projection on the bottom plate.

Asahina et al. teach one electrode at the top of each cell and another at the bottom. This allows for directly joining the connection protrusions, which leads to lower internal resistance and greater output ([0014]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to put electrodes at both the top and bottom of each cell so that they could be directly joined and the system would have lower internal resistance and greater output.

As for claim 10, Asahina teaches that the attachment of the battery cells in an end-to-end fashion. Asahina further teaches a gap between the cells when they are connected ([0050]). This gap allows for space for U-shaped members to be placed between the cells in order to ensure better sealing.

It would be desirable to leave space between the cells as taught by Asahina et al. because the space could be used for members to be employed to ensure good sealing.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to leave space between the cells in order to allow room for additional parts that would ensure good sealing of the lid or bottom to the casing.

Regarding claim 12, Asahina et al. teach an insulating coating on the inner surface of the battery case that secures high cooling capacity, which efficiently restrains temperature increases ([0066]).

It would be desirable to use insulation inside the battery case, either on the walls or on the ends, in order to secure high cooling capacity, thus efficiently restrains temperature increases.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use insulation inside the battery case, either on the walls or on the ends, in order to secure high cooling capacity, thus efficiently restrains temperature increases.

6. Claims 2, 3, 4, 6, 7, 9 and 11 (as dependent on 7) are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. in view of Asahina et al. and Masuda et al. (US Patent Number 4,65,932).

The teachings of Ikoma et al. and Asahina et al. as discussed above are incorporated herein.

Regarding claims 2 and 6, Ikoma et al. fails to teach the laminated electrode plate assembly such that substrates of the positive and negative electrode plates touch

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the sides of the battery casing and that there is a gasket between the bottom of the case and the edges of the plates.

Asahina et al. teach the case is joined to the collectors of the electrode plate assembly ([0015], [0017]).

It would be desirable to attach the electrode assembly to the case in order to ensure that the assembly does not shift, especially if the battery was for use in a portable device.

Ikoma et al. in view of Asahina et al. fail to teach a gasket at the bottom edge of the plates.

Masuda et al. teach an insulating gasket between the casing and the plates (Figure, column 6 lines 8-18).

It would be desirable to use a gasket to insulate the plates in order to retain the heat of the reaction to maintain the efficiency of the battery.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to attach the substrates of the plates to the sides of the casing as taught by Asahina et al. and to use a gasket between the edge of the plates and the bottom of the case as taught by Masuda et al. in order to ensure that the electrode plate assembly does not shift and to insulate the assembly.

With further regard to claim 6, Asahina et al. teach that the current collector plates have connection projections that are sealed to the case and extend beyond it (abstract).

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Regarding claim 3, Masuda et al. teach a flange in the sealing plate that is attached to the gasket from claim 2. The sealing part of the case comes up and around the flange (Figure).

Regarding claim 4, Ikoma et al. teach that the projecting ridges are discontinued by the opening of the case (Figure 1).

As for claims 7 and 11, Asahina et al. teach one electrode at the top of each cell and another at the bottom. This allows for directly joining the connection protrusions, which leads to lower internal resistance and greater output ([0014]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to put electrodes at both the top and bottom of each cell so that the could be directly joined and the system would have lower internal resistance and greater output.

As for claim 9, Ikoma et al. teach that the lid is welded to the case (abstract). Ikoma et al. further teach that the ribs of the lid correspond to the ribs on the casing (column 5 lines 9-11).

It would be desirable to make the ribs extend continuously from the casing to the lid because it might allow for better cooling in the battery of Ikoma et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to extend the ribs on the case of Ikoma et al. to meet the ribs of the lid in order to provide better cooling.

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7. Claim 8 is rejected under 35 U.S.C. 103(a) as being obvious over Ikoma et al. in view of Morishita et al. (US Patent Number 5,747,186).

Ikoma et al. teach the ribs on the casing of the battery but fail to teach that they will withstand certain operating pressures in the battery.

Morishita et al. teach that the batteries experience a high-pressure state during charging and discharging (column 1 lines 54-56). Morishita et al. further teach that the battery having this type of casing can withstand certain pressures (column 6 lines 56-65).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to ensure that the battery could withstand certain pressures associated with charging and discharging in order to ensure the safe operation of the battery.

Response to Arguments

8. Applicant's arguments filed August 23, 2007 have been fully considered but they are not persuasive.

First, on page 10 of the Remarks, in the first full paragraph, Applicants argue that Ikoma teaches away from extending the projecting ridges through the welding area. The examiner disagrees. According to the Applicants, the passages cited to support the argument, such as column 5 lines 1-2, 7-8, 15-16; column 6 lines 36 - column 7 line 20, teach that welding area should be as smooth as possible, and in order to achieve that all protrusions should be ground down to provide an area as smooth as is practical. The

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examiner agrees that Ikoma et al. teach the smoothing of protrusions; however, the protrusions Ikoma et al. discuss are not the same as the ridges on the case. The protrusions, or "protruded portions", in Ikoma et al., can be seen for example in Figure 4B. These are protrusions that are caused by the welding step and are smoothed *after* the welding (column 5 lines 14-21). Additionally, Ikoma et al. teach that, if the protrusions cannot be completely removed, they should be ground so as to have a height lower than the ribs (column 7 lines 9-13). It is the belief of the examiner that the teachings of Ikoma et al. concerning the protrusions do not teach away from the extension of the ribs as discussed above. Additionally, it is recognized that protrusions of comparable height to the ribs may exist in the welding area.

Next, Applicants discuss the limitations of cancelled claim 16, specifically, that the welding portions are "along 'the positive and negative electrode faces'" (p. 10 of Remarks). In the present rejection, the sealing plate of Ikoma et al. is considered to be analogous to the end face of the instantly claimed invention. The sealing plate of Ikoma et al. is connected to the body of the case by welding portions extending between the two parts. Additionally, on the periphery of the sealing plate of Ikoma et al. are found ribs corresponding to the ribs of the case. It appears that Applicants are arguing that the end face is flat, and therefore the weld is essentially in the same plane as the end face; however, such a limitation is not found in the claims.

Next, on pages 11-12, Applicants argue that the combination of Ikoma et al. and Asahina et al. is not valid because the cells of Ikoma et al. are designed to be stacked side-by-side, and not end-to-end. This argument is not found convincing because

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motivation has been provided to stack the cells of Ikoma et al. end-to-end, such as taught by Asahina et al.:

... it would have been obvious to one having ordinary skill in the art at the time the invention was made to put electrodes at both the top and bottom of each cell [such as in Ikoma et al.] so that the could be directly joined [such as taught by Asahina et al.] and the system would have lower internal resistance and greater output. (See above, paragraph 5)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


SUSYTSANG-FOSTER
PRIMARY EXAMINER